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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/580,533

05/25/2006

Hirokazu Asaka

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ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER

FARDANESH, MARJAN

ART UNIT

PAPER NUMBER

3777

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,533	Applicant(s) ASAKA, HIROKAZU	
	Examiner MARJAN FARDANESH	Art Unit 3777	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-16 is/are rejected.
- 7) ☒ Claim(s) 3 and 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2011 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

"The Abstract contains 155 words"

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 8-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diab et al. (USPN 2004/0158134) in view of Hok (USPN 5,786,592) and further in view of Yamashita et al. (USPN 6,611,698-Previously Cited).

Diab et al. discloses a pulse oximetry sensor for computing peripheral arterial oxygen saturation and hemoglobin concentration and a processor which

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provides signal quality based limits to a signal strength operating region of a pulse oximeter. It calculates the signal strength, which is the ratio of the peak to peak AC signal to the DC signal, in order to detect a pulse oximeter probe off condition ([0003]-[0009] and [0025] –[0031]).

While Diab et al. discloses calculating a hemoglobin signal representing a hemoglobin concentration inside the subject using the pulse oximeter sensor and inspecting the strength and adequacy of the signal detected, Diab et al. fails to disclose an irradiation use optical fiber set at an irradiation position on a body surface in an inspection area of a subject and irradiates an inspection light having a predetermined frequency of from visible to near infrared range and a light receiving use optical fiber set at a light receiving portion adjacent the irradiation use optical fiber on the body surface in the inspection area and receives the inspection light irradiated from the adjacent irradiation use optical fiber and penetrated through inside the subject, and plurality of the irradiation use optical fibers and plurality of the light receiving use optical fibers included in plurality of measurement channels.

Hok teaches a pulse oximetry sensor that has a light emitting and light detecting part containing light emitting diodes and photo detector electrically connected to a pulse oximetry instrument, and a two halved clamp. All signal communication between the patient and pulse oximeter instrument is performed optically by means of fiber optics (Col.1 line 65- Col.2 line 25, Col. 2 line 52-Col.3 line 65).

It would have been obvious to one having ordinary skills in art at the time invention was made to modify the pulse oximeter sensor of Diab et al. with teaching of using an oximeter in an MRI environment and using the optical fibers to transport light rather than having electronic components on the patient in the MR as taught by Hok, since such modification would have provided an oximeter system that uses optical fibers for irradiating and receiving light, making it suitable for use in an MRI environment.

Diab et al. in view of Hok fails to teach plurality of measurement channels including plurality of the irradiation use optical fibers and plurality of the light receiving use optical fibers wherein the irradiating use optical fiber is placed adjacent to the light receiving use optical fiber on the body surface.

Yamashita et al. teaches a highly reliable optical measuring instrument for multichannel simultaneous measurement which has an intensity of light emitted from a light source modulated at different frequencies and the light is applied to multiple positions of a test subject. The beams of different wavelengths are led into optical fibers for irradiation and are applied to four different positions for light application on the surface of the test subject and the light reflected inside the test subject is detected by photodiodes from five light detection positions on the surface of the test subject through detection optical fibers which are placed adjacent to the irradiation optical fibers (Col.6 lines 32-60 and Col.7 line 30-47 and figures 1 and 5).

It would have been obvious to one having ordinary skills in art at the time invention was made to modify the pulse oximeter system of Diab et al. in view of

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Hok with teaching of having plurality of measurement channels for applying light to multiple positions of test subject through plurality of irradiation optical fibers and detecting light applied to each position of the test subject as taught by Yamashita et al., since such modifications would have allowed for the plurality of irradiation optical fibers to apply the light to multiple positions of a test subject and plurality of receiving optical fibers to receive the light from each light applied position, in order to provide multi-channel simultaneous measurement.

4. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diab et al. (USPN 2004/0158134) in view of Hok (USPN 5,786,592) and further in view of Yamashita et al. (USPN 6,611,698) as applied to claim 1 above, and further in view of Dekker (WO 03/071938-Cited by Applicant).

While Diab et al. in view of Hok and further in view of Yamashita teach a pulse oximetry sensor for computing peripheral arterial oxygen saturation and hemoglobin concentration and a processor which provides signal quality based limits to a signal strength operating region of a pulse oximeter. It calculates the signal strength, which is the ratio of the peak to peak AC signal to the DC signal, in order to detect a pulse oximeter probe off condition, Diab et al. in view of Hok and further in view of Yamashita fail to teach a band pass filter and a means for performing frequency analysis on the data applied of the band pass filter.

Dekker teaches an oximeter for monitoring blood oxygenation levels including obtaining a pleth, filtering the pleth to remove unwanted components, identifying signal components of interest, and performing frequency analysis

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(page 7 lines 5-30, page 17 lines 3-35, page 19 lines 5-20 and page 29 line 6-
page 32 line 15).

It would have been obvious to one having ordinary skills in art at the time invention was made to modify the oximeter probe off detector of Diab et al. in view of Hok and further in view of Yamashita as applied above with the teaching of applying a band pass filter and performing frequency analysis on the obtained signal as taught by Dekker, since such modification would have provided a oximeter system capable of filtering and performing frequency analysis of the signal in order to extract pulse wave components due to heart beat and obtain the signal component of interest.

Allowable Subject Matter

5. The following is a statement of reasons for the indication of allowable subject matter: Dekker (WO 03/071938) discloses an oximeter for monitoring blood oxygenation levels including performing frequency analysis on the pleth signal, but fails to disclose that the intensity of the pulse wave component calculated is fourth order statistics around the center frequency among the pulse wave component.
6. Claims 3-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARJAN FARDANESH whose telephone number is (571)270-5508. The examiner can normally be reached on Monday-Friday 9:30-18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TSE Chen can be reached on (571)272-3672. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eric F Winakur/
Primary Examiner, Art Unit 3777

/MARJAN FARDANESH/
Examiner, Art Unit 3777